Teachers' experiences using networked technologies for teaching

Maria Cutajar

University of Malta, maria.cutajar@um.edu.mt

Abstract

At a given Maltese Higher Education complex there is increasing drive to encourage teaching academics to incorporate networked technologies in their teaching therefore expanding face-to-face campus-based education to blended and online provision. This paper reports on research findings of an explorative study investigating variation in academics' accounts of their experiences using networked technologies for teaching in this local context. Twenty-seven participating academics were purposively chosen from different faculties, institutes, centres and colleges. The sample was also balanced in terms of tenure, ranking, gender and age. Phenomenographic analysis of interview transcript data led to a configuration made up of 5 hierarchically inclusive categories describing the act of using networked technologies for teaching as: (i) Accumulating subject content for passing on to students for learning; (ii) Motivating and accommodating students to understand subject content in learning; (iii) Building a positive teacher-student rapport in extending students' learning; (iv) Modelling behaviour inspiring students to exploratory learning; (v) Fostering a community of learners participating and convening in dialogic learning. These categories of description are also configured as structurally threaded by three critical themes of expanding awareness including perceived affordances of networked technologies for teaching, human roles in teaching, and teaching pedagogic strategy. This phenomenographic description suggests a watershed between the third and fourth categories going from the incorporation of networked technologies in teaching activity for their auxiliary capacity for learning - teaching as transmission (of subject knowledge, of understanding, of empathy), to the incorporation of networked technologies as a seamless facet of teaching activity - teaching as participation (in exploratory learning, in dialogic learning). This description of variation in teachers' accounts of their experiencing using networked technologies for teaching confirms previous research but also adds new detail and insight. Besides, the resultant configuration projected as an emergent progression of expanding awareness is reckoned a means for positively inspiring network enhanced development of teaching practices. The thinking about variation in teachers' experiences as promoted by this research is potentially a means to encourage and facilitate the professional development of teaching academics steering away from pressure for change. Potentially it evokes a constructive outward view in the attempt to support best practices in HE teaching.

Keywords

Teacher experience, networked technologies, teaching, phenomenography, higher education

Introduction

In Malta, there is increasing ambition for higher education (HE) - including post-secondary general education programmes leading to university courses - to use networked technologies for and in teaching. The “Higher Education Strategy for Malta 2014-2024” specifically recommends “the use of Information and Communication Technologies as well as the development of study programmes" permitting learners flexibility in choice and ways of learning and for "encouraging individuals to return to education alongside employment even through distance learning and e-learning” (National Commission for Further and Higher Education, 2014, p.27). Recently the Ministry of Education and Employment published two visionary consultation documents for the reform of HE, one focusing on the post-secondary (general education) sector and the other regarding a new University of Malta Act. Both documents underscore the need to increase and diversify the use of networked technologies for teaching and learning in today's ubiquitously technologically connected world.

The University of Malta (UM), which also manages one of the largest post-secondary colleges on the island, for some time has been prompting its academics to incorporate networked technologies in their teaching. Presently, there is also a new policy document being drawn up in this respect. Prior to this was the collective agreement (2014 -2018) for academic staff which declared acknowledgement of effort for teaching academics integrating

the use of networked technologies for teaching and also a UM scholarship scheme (2014) sponsoring academics (who proved to be early adopters of technologies for teaching and learning) to an online teaching certification course on condition that they later help in UM professional development activities. In the meantime, from time to time, the UM information technology services (ITS) deploy new technologies for use by teaching academics and offer introductory training sessions to encourage take up which to date generally remains an academic's prerogative.

The increasing drive of the UM to encourage its teaching academics to incorporate available technologies in their professional practices was the main reason for undertaking this explorative study investigating academics' experiences using networked technologies for teaching. This paper reports on the main outcome of this exploration. Primarily this research is important for the local context providing a current description of variation in academics' experiences integrating available technologies in their teaching practices from their own perspective. This representation is considered important for informing initial and professional development initiatives within the concerned HE institution. The research also contributes new insight to the growing body of holistic literature describing teachers' experiences of using available technologies for teaching. Besides, it advances a picture of teachers' experiences as an emergent progression of expanding awareness (Cutajar, 2014) based on a phenomenographic research approach and related theoretical orientations.

Research background

For the purpose of this study, networked technologies are understood to be information and communication technologies (ICT) - mostly Internet-based technologies nowadays, but generally not limited so. This broad definition is assumed to favour the second order attitude of phenomenographic research aiming to embrace the different perspectives put forward by participants in research. Teaching using networked technologies is theoretically taken to object networked learning, or specifically learning mediated by ICT promoting connections between the learner and the tutor, the learner and other learners, and the learning community and its resources (Goodyear et al., 2010). Garrison & Anderson (2003) note that in the formal learning context where the main actors are the students, teachers, and resources there are consequently six possible 'interactive dyads' or modes of interactions. One may like to think that most empowering is the situation wherein all modes are effectively functioning in two-way mode for learning. This situation of wide-ranging interactivity for teaching and learning mediated by ICT is one end of the spectrum. Teaching and learning practices using networked technologies are situationally understood and approached promoting less or more connections for learning; and moreover, the modality of connections which may be one-way or multi-way. The concern of this study is a HE institution which in today's networked world is seeing the need to look beyond provision of face-to-face campus-based education.

In view of the permeation of networked technologies in formal educational contexts, the differences between campus-based and distance education are progressively narrowing. In her recent keynote during the Tenth International Conference on Networked Learning, Sian Bayne (2016) highlighted universities as "a complex choreography of on-campus and off-campus". She noted that teaching and learning using networked technologies "produces space newly, and in the process requires us to devise new ways to describing and researching learning within the university". On campus-based education, Gourlay (2012) affirms that the lecture has become a complex configuration of the material and the digital, the physical and the virtual, the online and the offline, the face-to-face and the distant, the synchronous and the asynchronous. But while educational technology forerunners advocate inter-human connections for teaching and learning using available digital technologies (for example McConnell, Hodgson & Dirckink-Holmsfeld (2012) and Dron & Anderson (2014)) and have long envisaged the Internet as the agent of change from transmissive teaching attitudes (for example Weller (2007) and Harasim (2012)) there continue to be research reports and observations that the integration of technologies in educational processes is still not resulting in any fundamental change from traditional teaching attitudes communicating information to students (for example Kirkwood & Price (2013) and Lodge et al. (2015)). This situation prompts an appraisal of the state of affairs even in the concerned HE institution for supporting teaching development processes.

Previous Literature

Research studies on teachers' experiences of technologies for teaching in Malta are scarce. The two unearthed studies on Maltese teachers' experiences of technologies both use the technology acceptance model (TAM) to investigate compulsory school teachers' acceptance of technologies introduced in their work context (Borg, 2016; Camilleri & Camilleri, 2017). As yet there appears to be no published studies on local HE teachers' experiences of using digital technologies for teaching. This research which pursued a description of variation in academics' experiences using networked technologies for teaching is a new contribution to the Maltese HE context. Closest is a concurrent qualitative study (also sponsored by the UM) which is investigating academics

who were invited to read an online teaching certification course. In consideration of unearthed published literature from the wider context there are now a number of qualitative studies focusing on teachers' experiences of technologies and which target variation, more or less avoiding the contrasting viewpoint and notions of conflict (Cutajar, 2014). Earlier studies investigated university lecturers (Roberts, 2003; Lameras et al., 2012; Shah & Hodgson, 2014). Recent studies researched teachers in the vocational education setting (Khan, 2015) and teachers in the compulsory school setting (ChanMin et al., 2013; Waight et al., 2014). Some studies bring in teachers from across different discipline areas (Gonzales, 2012; Shah & Hodgson, 2014; Khan, 2015). Others consider teachers teaching specific subjects. For example, Souleles (2011) is focused on university teachers of art and design, Lameras et al. (2012) focus on university teachers of Computer Science, and Waight et al. (2014) investigated chemistry primary school teachers teaching on a specific course unit. Studies generally confirm a pattern of variation in the use of technologies for teaching ranging from access and accumulation of subject content to mobilising the communicative nature of technologies to build a learning support network for teaching and for students' learning. This pattern matches the information transmission/teacher-focused approaches as opposed to conceptual change/student-focused approaches to university teaching reported earlier by Prosser & Trigwell (1999). Specifically from the HE sector, Lameras et al. (2012) emphasised the influence of teaching roles and attitudes to teaching. Hodgson & Shah (2016) reaffirmed that teachers' use of technologies is tied to assumed pedagogy. Joining this holistic research strand, in this study there was a directed effort to accentuate the legitimacy and relatedness of distinct ways of experiencing teaching using networked technologies which at times is not seen so explicit in unearthed studies. In this study variation in experiences is described by inclusive distinct categories overarchingly structured by "themes of expanding awareness" which as Åkerlind (2005) explains are comprised of "structural groupings of dimensions of variation" (p.122). This configuration is reckoned conducive to incite constructive appraisal encouraging and informing the seamless incorporation of current digital technologies in teaching.

Study

The phenomenographic approach and related theoretical orientations of intentionality, discernment and awareness (Marton & Booth, 1997) as outlined by Cutajar (2014) were assumed for this investigation. Data was generated through individual interviews with 27 consenting teaching academics of the UM complex. The resulting sample of participants was balanced in terms of gender, age, academic status, rank tenure, disciplinary area and teaching experience (even at different levels [4-8] of the European Qualifications Framework). Interviews were carried out in the first quarter of the year 2016. Participants were invited to describe personal experiences using networked technologies (where necessary clarified as Internet-based technologies). Questions probed intentions and the benefit for students seen in what was described. Neutral probes were used for encouraging further elaboration and/or clarification of what was being disclosed. Interviewees were free to express themselves in Maltese or English however they felt most comfortable. 9 out of the 10 transcriptions completed by the bilingual researcher were of the Maltese-based interviews. The remaining 17 English-based interview transcriptions were outsourced and later verified by the researcher. The Maltese-to-English translations done inhouse of selected quotations where forwarded to a professional translator for proofreading. The analysis spread across a period of 8 months. During the earlier stages of data analysis, qualitative data software (NViVo) was used to annotate the transcripts and to mark relevant excerpts, but generally the iterative process of phenomenographic data analysis was all a manual effort supported by generic office software tools. Through the earlier iterations of phenomenographic analysis, the effort was with reference to raw transcripts. For the later iterations when the researcher was very familiar with the participants' accounts, the analysis was mostly with reference to the relevant excerpts highlighted earlier. Through the earlier iterations of data analysis, the focus was mostly on identifying differences and commonalities in the participants' accounts towards the construction of the next set of categories of description. As these stabilised when past the fourth iteration, attention was given also to the structuring themes bringing together the constituted categories. This analysis was all done by a single researcher. At the end of this analysis process, the results and the pool of transcript excerpts generated were passed on to another phenomenographer external to this work for validation purposes. This review led to a slight modification for accentuating the distinction between the first and second categories.

Research findings

Figure 1 graphically presents the phenomenographic outcome space configured through the accounts of participating academics on their experiences using networked technologies in teaching practice. Variation is constituted by 5, hierarchically inclusive, distinct categories which, with increasing elaboration, describe the act of using networked technologies for teaching as (i) accumulating subject content for passing on to students for learning; (ii) motivating and accommodating students to understand subject content in learning; (iii) building a positive teacher-student rapport in extending students' learning; (iv) modelling behaviour inspiring students to

ISBN 978-1-86220-337-2

exploratory learning; and (v) fostering a community of learners participating and convening in dialogic learning. Figure 1 also shows the predominant focus cluster for each category. The categories are also configured as structurally tied together by 3 critical themes of expanding awareness including perceived affordances of networked technologies for teaching, human roles in teaching, and teaching pedagogical strategies. Acknowledging the analogue nature of expanding awareness, seemingly paradoxical, the distinct categories simultaneously come together seamlessly to form a complete picture.

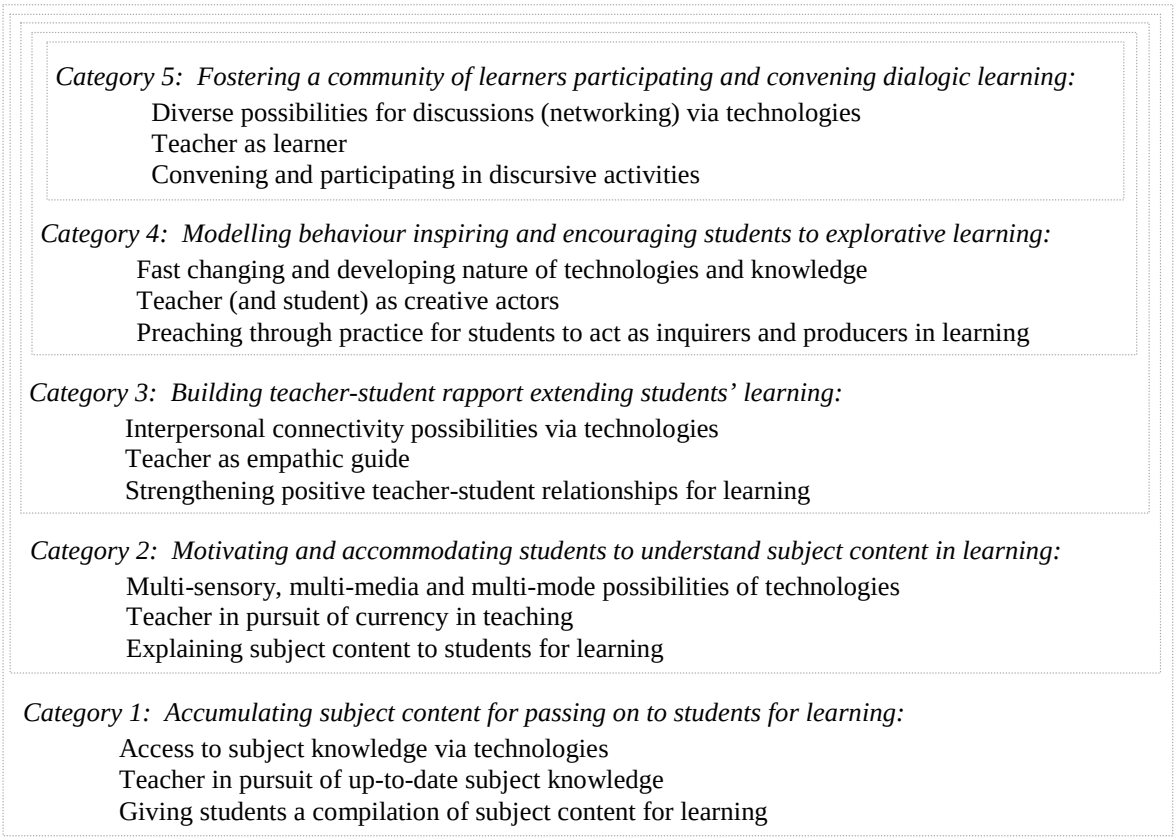

Figure 1: Graphical Representation of outcome space

Category 1

Academics of this category acknowledge networked technologies as significant contemporary tools. Particularly they foreground the Internet as a massive "library". It is recognised as very useful for looking up information when preparing lecture notes to be directly or indirectly shared with students for study purposes. The intention is to help the students in their studies providing them with a compilation of study content. Possibly, the academic aligning to this category uses the asynchronous communication possibilities such as the mobile phone short messaging service or electronic mail for teaching process issues such as lecture cancellations, reminders of due assessment work, or to respond to the unconventional student who ventures to post the lecturer a question using electronic media. Generally, networked technologies are used "for teaching" as much as they help make established practices more efficient in distinction from their use "in teaching" as the case of the other more elaborate categories:

> "I am preparing my lesson. I come across a certain term. I note it down. I look [it] up. Today I'd rather than go to the library look it up [online] in the Stanford Encyclopaedia of Philosophy for instance or Google Scholar for instance … Because physically it's easier than, you know, going to the library, whatever. Moreover, the availability of resources is obviously bigger" (T19).
> "My intentions are to help the students … I think that they find it much easier than when they have to read up 5 different books, that one says that, the other says that ... so the notes ... when I teach I try to incorporate as much information as I can" (T13).

Category 2

The academic aligning to this category foregrounds the multi-sensory, multi-media and multi-mode possibilities of available technologies. This leads the academic to see the usefulness of technologies for motivating students to engage in learning activity, to make learning fun, exciting and easier to cope with. The intention is

'to spark off' students' interest, to explain subject content to students, and help them to understand it. Through networked technologies, the academic aligning to this category is actively seeking to motivate and facilitate students' understanding of subject content moreover the effort to access, accumulate, and disseminate it to students as in the previous category. Aligning to this category academics acknowledge the unavoidability of technologies which have become 'part and parcel' (T23) to work and research practices. They feel pressured to show themselves current in technology use but are not disposed to reach out to the students by "bending to their culture" as academics aligning to more elaborate categories in using networked technologies for teaching:

> "my intention is to make knowledge more understandable and to make learning more meaningful. It has to be more meaningful in the sense that they can see something which is abstract, as I show a simulation for example. It can help in that sense. And it is also to show others - I have never thought of it this way, I don't know but – others have to know that you are literate in this camp because that way it is going to improve their sense of becoming more literate" (T27).
>
> "today I cannot imagine myself without it [Internet]. I use YouTube clips very frequently in my classes, and I can get YouTube clips because there is Internet … Internet is a fantastic tool if used properly. And I think that again, since our sessions are all two hours, showing a clip of five or ten minutes, getting some debate and then continuing with the lecture, you know, splitting a bit the class. I think that is fascinating. [It is] an opportunity that should be taken up by everyone. We need to engage, and Internet is perhaps the most powerful tool to engage" (T2).

Category 3

The academic aligning to this category is also foregrounding the importance of a 'good' teacher-student rapport for improving students' learning. Connecting to students through the technologies they prefer is a means for strengthening the teacher-student rapport which is 'key' to motivating students' learning. The intention is to enthuse students to actively pursue learning, and extend provision and connectedness with the teacher using technologies. The diversity of networked technologies and media are seen as helping to respond to students' different needs, styles and preferences moreover being a means for connecting to students hence accentuating a "caring" perspective. The concern to convey subject content to students is similar to the earlier categories yet distinct in its intention to put students' "mind at rest". Similar to the previous category this academic is also concerned motivating and supporting students' understanding of subject content. In more distinction from earlier categories the academic is also seeking to remain in contact with students for responding to their learning needs just in time encouraging, guiding and monitoring students in active pursuit for learning what has to be learnt. However, different from more elaborate categories the academic is reactively and not proactively encouraging a participatory culture for learning:

> "it's a major teaching aid and it's building my rapport with the students, which is …key to motivation. Having a good rapport with your students. So the fact that I am kind of doing things that they like, maybe, I hope, will, you know, will make the rapport become even better and stronger, that I have with them, I hope. I don't know" (T7).
>
> "My understanding is that these technologies improve access to learning ... even for persons with disabilities, for people with different learning difficulties. It's a way of access, enhancing learning and extending learning. That is what I understand … Also to build on even the social rapport. It extends learning both as an academic for what you need to know, but even on one-to-one as a teacher to help you understand learning, or support you in whatever … For example, they like the idea of having a Facebook page … I didn't have even Facebook myself. I didn't know of it. I said, "Fine, I'll do whatever you want" I tell them. I don't kill it. Basta [only] make sure that you are very sensitive on what you put. I always said that ... because it is my responsibility as an educator to always make sure things are useful, are with the right principles, are you know - the idea of sending good values is cross-sectional. It's across and it comes instinctively to me … I see myself as a caregiver (T15).

Category 4

Academics aligning to this category take it upon themselves to persistently create situations demonstrating through their own activeness the seamless integration of current technologies in teaching practice and prompting students to do the same in their learning practices. The intention is "preaching through practice". The academic focuses on being a "performer" and an "animator, coach, mentor and tutor". The students are projected as active participants sharing the stage of the teaching and learning process as creative producers too. Subject content is promoted as a means for learning rather than an end – it is "almost an excuse" and "tomorrow will be obsolete". Using networked technologies is interpreted as an 'eye-opener' for the students and also for the teacher as the teacher's thinking about teaching is in a dynamic process of development too. As in the case of previous categories available technologies are reckoned as significant tools for accessing information, but distinctively just-in-time when required; for supporting understanding of subject content, but which is distinctively retrieved

in exploratory learning activity; for encouraging ongoing two-way communication, distinctively now not only with the teacher but also with other students to help in learning. The academic now actively seeks to "transmit a culture" using "malleable technologies" to address the problem of volatility of knowledge through student-centred pedagogical approaches leading students to exploratory discovery in learning:

> "My approaches are not to always use the same technology, the same platform, or to pick up on one [technology] and always the same, but to adapt. First of all, I adapt to the people who are in front of me, that's first and foremost. Secondly, to use a number of technologies, and rather than using them myself, to encourage my students to use a number of different technologies, to discover [learning] technologies for themselves. More than the technologies, their application for reaching their objectives. I mean there are occasions when the students discover [technological] tools which I don't even know about. And he tells me for example "I found that very useful. Really good. I'm really using it well. I really used it during the teaching practice. I really enjoyed it." And I like that as well because it wasn't me who told him, but through certain approaches which we used in class, he is able to discover tools and make them his own" (T18).
>
> "So, they see me doing things with my mobile phone which initially seems to be part of the lecture, and then they realise while I'm doing it and once that realisation starts to sink in then they start seeing that there is meaning in what I'm doing. And they follow it" (T1).

Category 5

The academic aligning to this category of description foregrounds discursive activities for bringing about learning. The academic discerns the potential of networked technologies as two-way communication resources permitting discursive activities among students therefore the means for fostering a community of learners involving students in collaborative activities including inter-student conversations, discussion, and debate. The intention is to encourage the development of students' higher order skills such as critical, analytical and leadership skills. In teaching the focus is on dialogic learning 'pushing' the students 'to go beyond the basic' encouraging debate among students, cheering them to 'argue' and 'fight' with each other for learning. Teachers aligning to this category foreground themselves as learners too more openly than the previous category. They also see themselves learning from the questions and the shared experiences of students. Students potentially present challenges that a teacher needs to follow on. The teacher is projected as a member of the community of learners which s/he is seeking to foster using whatever technologies best fit purpose:

> "So first is warming up exercises. It might be a virtual cork board, it might be simple, from name your hero or something silly or what are your three objectives? What would you like to learn through this study unit, you know? … We do that to get them to communicate and get them to start to create that community of learners basically … the lecture might have a week of reading only or two weeks of reading only so we would provide the students with specific reading material and then the following period would be four weeks of very intensive critical discussions which the lecturer will lead but also be a member of and participate" (T8).
>
> "one of the main aims ultimately of you, of delivering an online programme is to create a community of learners. And, I want to be a sort of, a part of the community but not - So, I think, I have to give the initiative. I have to leave the initiative in their hands in a way because I feel that that helps to form a community of learners even more naturally. It's not forced. So, I'm constantly present like I prepare announcements, and I provide guidelines for the week for instance. But in the debates, I do like to sort of - basically I try to take the role of asking a couple of questions and then encouraging a discussion. But I like to let the students take the lead. I think it helps to foster a community of learning, of learners. So far it has worked I think, I hope, at least" (T9).

Referentially, (the meaning given to the act of experiencing the use of networked technologies for teaching) broadens from the use of networked technologies to amass up-to-date information possibly its dissemination to students; to spark students' understanding and motivate students for learning; to pursue positive teacher-student relationships encouraging active student engagement extending learning; to activate student-centred exploratory learning attitudes; to foster a learning network wherein to participate, collaborate and co-create. Structurally, (simultaneously foregrounded elements giving structure to the act of experiencing) broadens from foregrounding networked technologies as source of information to disseminate to students for learning; to foregrounding also multi-media, multi-sensory, and multi-modal possibilities of networked technologies for motivating and deepening students' learning of disciplinary content; to foregrounding networked technologies also as means for teacher-student connectedness towards shared learning responsibility; to foregrounding networked technologies also as a malleable platform inspiring exploratory discovery in learning; to foregrounding networked technologies also as platform to set off and pursue interhuman discursive activities

(for knowledge generation). Correspondingly intertwined, these referential and structural perspectives constitute the distinct ways of experiencing using networked technologies for teaching.

Discussion

The present research mapping teachers' experiences of using networked technologies for teaching generated an outcome space comprised of 5 categories of description referentially and structurally distinguished from each other, simultaneously brought together by three critical themes of expanding awareness overarchingly threading them together. In this phenomenographic outcome there is suggested a watershed between the third and fourth categories going from the incorporation of networked technologies in teaching activity for their auxiliary capacity in learning - teaching as transmission (of subject knowledge, of understanding, of caring attitude), to the incorporation of networked technologies as a seamless perspective in teaching activity and learning - teaching as participation (in exploratory discovery learning, in dialogic learning). It confirms the findings of earlier similar empirical studies (Lameras et al, 2012; Shah & Hodgson, 2014; Khan, 2015). Again, there emerges the overarching trend of variation in experiencing going from using available ICT for sustaining traditional transmissive practices to the incorporation of available ICT rethinking teaching practice as a participative process (not so different and removed from learning). This research even resonates to theoretical literature claims such as White & Le Cornu's (2011) typologies of teaching using available technologies as a 'visitor' in contrast to teaching using available technologies as a 'resident'. But comprehensively it advances different experiences as legitimate, related, and above all an emergent progression of expanding awareness (Cutajar, 2014). This configuration of variation in experiencing projected as a continuum, does not mean that across time an individual academic's experience is necessarily in an onward movement because experiencing as a product of awareness is temporally and situationally bound (Cutajar, 2017)). Dependent on what an academic makes out of a given situation s/he may align to a high degree to one category or another depending on what is foregrounded in that specific situation therefore meaning made out and intertwined; yielding a particular instance of experiencing networked technologies for teaching. That is, although this phenomenographic outcome space shows different experiences as in a forward movement of expanding awareness (increasingly simultaneous discernment of the features of the phenomenon) forming an inclusive hierarchy, this is not to be interpreted as a progression in the sense that once a particular way of seeing is adopted a given experiencer may not revert to a less elaborate positioning. It needs to be kept in mind that a person might, to a high degree, align to a more or less category depending on past and present experiences in a specific situation in space, place and time thus showing up both transmissive and participative attitudes as important aspects of teaching and learning. From this research there also emerged a new category wherein the teaching academic exploits networked technologies for strengthening the rapport with the students for learning. This adds a new detail to the current picture of variation. Furthermore, this research not only underscores pedagogy (Hodgson & Shah, 2016) and human roles (Lameras et al, 2012) as critical aspects of variation but also the perceived affordances of technologies for teaching. From this inductive research, it surfaces that teachers' discernment of how (and how much) technologies can be operationalised for and in teaching practice is also a determinant of their experience as much as assumed pedagogical strategies and perceived human roles.

Concluding Remarks

In this paper was shared a phenomenographic description of variation in Maltese HE teachers' accounts of their experiencing using networked technologies for teaching. This research outcome contributes with new knowledge to the current picture of academics' experiencing of networked technologies for teaching. Additionally, this way of thinking about the different teachers' experiences is advanced as a means to develop educational provision encouraging positive refinement rather than creating pressure for change. Potentially it evokes a positive outlook in the attempt to support 'best' teaching practices. The increased policy calls for ‘21st century skills’ are all in good faith but inadvertently create tension and apprehension not so much expedient to HE as a constructive generator of learning communities within the institution and national, international and transnational communities at large. We need to go beyond hype and coercion in our teaching practices. Indeed, there are situations where it makes sense to let go of technologies to reclaim conversations in teaching and learning (Turkle, 2015) and address the escalation of networked individualism. But in ubiquitously technologically networked settings, an expansive perspective such as generated by this explorative study may in the long run serve better than an appeal to put aside technologies. The invitation to rise above contrasts and binaries in our thinking and development of teaching practices for using networked technologies ongoingly as best fit and serve purpose.

References

Åkerlind, G. S. (2005). Phenomenographic methods: A case illustration. In J. Bowden & P. Green (Eds.), Doing Developmental Phenomenography. Melbourne, Sydney: RMIT University Press.

Anderson, T., & Dron, J. (Producer). (2012, 22 August 2012). It's hardly easy to be softly hard: freedom and control in learning spaces. [Presentation] Retrieved from http://www.slideshare.net/jondron/its-hardly-easy-to-be-softly-hard-freedom-and-control-in-learning-spaces

Bayne, S. (2016). Campus codespaces for networked learners. Keynote address, 10th International Conference on Networked Learning. Lancaster: UK.

Borg, J. (2016). Teachers' contextual interpretations of Fronter in a local boys' secondary school: A case study. Unpublished masters' thesis, University of Malta, Malta.

Camilleri, M. A., & Camilleri, A. C. (2017). Digital Learning Resources and Ubiquitous Technologies in Education. [journal article]. Technology, Knowledge and Learning, 22(1), 65-82.

ChanMin, K., Min Kyu, K., Chiajung, L., Spector, J. M., & DeMeester, K. (2013). Teacher beliefs and technology integration. Teaching and Teacher Education, 29, 76-85.

Cutajar, M. (in publication). The phenomenographic approach investigating variation in higher education teachers' experiences using networked technologies for teaching. In Madalinska-Michalak, J., & Attard Tonna, M. (Eds.), Teacher education from a global perspective, University of Warsaw publishing house.

Cutajar, M. (2017). The student experience of learning using networked technologies: an emergent progression of expanding awareness. Technology, Pedagogy and Education, 1-15.

Garrison, D. R., & Anderson, T. (2003). E-learning in the 21st Century: A framework for research and practice. London, UK: RoutledgeFarmer.

Goodyear, P., Banks, S., Hodgson, V., & McConnell, D. (Eds.). (2010). Advances in research on Networked Learning. Dordrecht: Kluwer Academic Publishers.

Gourlay, L. (2012). Cyborg ontologies and the lecturer's voice: a posthuman reading of the 'face-to-face'. Learning, Media and Technology, 32(2), 198-211.

Hodgson, V., & Shah, U. (2016). A phenomenographic study of lecturers' conceptions of using learning technology in a Pakistani context. Learning, Media and Technology, 1-16.

Khan, S. H. (2015). Emerging conceptions of ICT-enhanced teaching: Australian TAFE context. Instructional Science, 43(6), 683-708.

Kirkwood, A., & Price, L. (2013). Missing: evidence of a scholarly approach to teaching and learning with technology in higher education. Teaching in Higher Education, 18(3), 327-337.

Lameras, P., Levy, P., Paraskakis, I., & Webber, S. (2012). Blended university teaching using virtual learning environments: conceptions and approaches. Instructional Science, 40(1), 141-157.

Lodge, J. M., Lojeski, K. S., & Ashwin, P. (2015, 6 October 2015). The campus experience is changing all over the world, The Conversation. Retrieved from https://theconversation.com/the-campus-experience-is-changing-all-over-the-world-46866

Marton, F., & Booth, S. (1997). Learning and awareness. Hillsdale, NJ: Lawrence Erlbaum.

McConnell, D., Hodgson, V., & Dirckinck-Holmfeld, L. (2012). Networked Learning: A Brief History and New Trends. In L. Dirckinck-Holmfeld, V. Hodgson & D. McConnell (Eds.), Exploring the Theory, Pedagogy and Practice of Networked Learning. New York, USA: Springer.

Roberts, G. (2003). Teaching using the web: conceptions and approaches from a phenomenographic perspective. Instructional Science, 31(1/2), 127-150.

Shah, U. (2014). Teacher's Use of Learning Technology in a South Asian Context. In V. Hodgson, M. De Laat, D. McConnell & T. Ryberg (Eds.), The Design, Experience and Practice of Networked Learning. Switzerland: Springer International Publishing

Souleles, N. (2012). Phenomenography and elearning in art and design. Paper presented at the Networked Learning Conference 2012, Maastricht.

Turkle, S. (2015). Reclaiming Conversations. New York: Penguin Press.

Waight, N., Liu, X., Gregorius, R. M., Smith, E., & Park, M. (2014). Teacher Conceptions and Approaches Associated with an Immersive Instructional Implementation of Computer-Based Models and Assessment in a Secondary Chemistry Classroom. International Journal of Science Education, 36(3), 467-505.

Weller, M. (2007). The distance from isolation: Why communities are the logical conclusion in e-learning. Computers & Education, 49(2), 148-159. doi: 10.1016/j.compedu.2005.04.015

White, D. S., & Le Cornu, A. (2011). Visitors and Residents: A new typology for online engagement. 16(9).